CAUSES OF CHEMICAL CHANGES IN TUBEWELL WATER QUALITY IN SCARP-I

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ABSTRACT

Water quality data of about two thousand SCARP-I tubewells have been analysed to ascertain the causes of chemical changes occurred during a span of 25 years i.e. (1960-1985). The data showed that change from better to poor quality is mainly due to increase in RSC parameter. Limited data on lithology of well strata indicated that tubewells installed in coarse formation have shown improvement or no change while deteriorating wells contain different layers of clay which are considered to be the main source of soluble salts.

INTRODUCTION

For any successful irrigated agriculture project, both quantity and quality of water are of significant importance. The parameters which determine the suitability of an irrigation water are i) total concentration of soluble salts commonly expressed as ECw ii) the relative proportion of sodium to calcium and magnesium calculated as SAR and iii) the concentration of carbonates and bicarbonates over the calcium and magnesium indicated as RSC. Any drastic change in the fore stated parameters would make the water unfit/fit for irrigation purpose. Therefore, periodic monitoring of the chemical quality of the groundwaater supplies in any area/project is of paramount importance. In this study, sincere efforts were made to ascertain the changes in the chemical quality of the SCARP-I tubewells which

The historic EC, SAR and RSC data of 1901 tubewells were collected from the records of SCARP Monitoring Organization of WAPDA. These data were first categorised into three general groups viz i) Tubewells showing no changes in water quality, ii) Tubewells showing improving trends and iii) tubewells showing deteriorating trends; This classification was based on water quality standards adopted by WAPDA, (Beg, 1989) and are given below:

Category	EC micromhos/ cm at 25 C	SAR	RSC (meq/l)
Usable (U) Water which can be used directly for irrigation without duration	upto 1500	upto 10	upto 2.5
Marginal (M) Water usable after dilution with canal water with 1:1 ratio	1500-2700	10 - 18	2.5 - 5.0
Hazardous (H) Waters that are difficult to use without damaging crops or soils.	2700	18	5.0